REMARKS

This amendment is responsive to the non-final Office Action mailed on August 16, 2006. Claims 1-17 are pending. Claims 1 and 15 have been amended. In view of the foregoing amendments, as well as the following remarks, Applicants respectfully submit that this application is in complete condition for allowance and request reconsideration of the application in this regard.

Rejection of Claims Under 35 U.S.C. § 102

Claims 1-3, 5, and 8-10 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,891,350 to Shan et al. (hereinafter *Shan).* Of the rejected claims, claim 1 is the only independent claim. The Examiner contends that *Shan* shows or teaches all the elements of the rejected claims. Applicants respectfully disagree with the Examiner's contention for the reasons set forth below.

Shan fails to disclose or suggest "a separating ring configured to form a vacuum-tight seal between said first electrode and said second electrode and defining an evacuatable processing region between said first electrode and said second electrode" or "said separating ring electrically isolating said first electrode from said second electrode", as set forth in Applicants' independent claim 1. The Examiner contends on page 2 of the Office Action that *Shan* discloses "a separating ring (26; Figure 3; column 9; lines 31-37) for forming a vacuum-tight seal between said first electrode (30; Figure 1,3; column 3, lines 34-41) and said second electrode (24; "A_{anode}; Figure 1,3; column 7, lines 1-15)." The Examiner's construction of the disclosure in *Shan* is flawed.

Applicants direct the Examiner's attention to column 3, lines 55-58 of *Shan*, which discloses that the feature labeled with reference numeral 26 is an "**annular aperture or slit 26** in the chamber side wall 20 that allows a workpiece (e.g., a silicon wafer) to be transferred into and out of the chamber." (Emphasis added). Consequently, *Shan* fails to disclose that feature 26 is any type of separating ring of dielectric material between electrodes, as claimed. Instead, feature 26 represents an unfilled volume or passage. The Examiner contends on page 2 of the Office Action that feature 26 is found in Figure 3 of *Shan*. However, Applicants cannot locate feature 26 in Figure 3 of *Shan*. The Examiner contends on page 2 of the Office Action that the column 7, lines 7-15 of *Shan* pertains to the feature labeled with reference numeral 26. However, Applicants note that the disclosure at column 7, lines 7-15 pertains instead to a capacitor in the equivalent circuit shown in Figure 2 of *Shan*. The disclosure at column 7, lines 7-15 does not pertain to the structure shown in Figure 3 of *Shan*.

In order for a reference to anticipate the invention in a claim, the reference must teach each and every element in the precise arrangement set forth in the claim. If the reference fails to teach even one of the claimed elements, the reference does not and cannot anticipate the claimed invention. *Shan* fails to disclose "a separating ring configured to form a vacuum-tight seal between said first electrode and said second electrode and defining an evacuatable processing region between said first electrode and said second electrode" or "said separating ring electrically isolating said first electrode from said second electrode", as forth in Applicants' independent claim 1. Therefore, *Shan* does not anticipate independent claim 1. For at least this reason, Applicants respectfully request that this rejection be withdrawn.

Independent claim 1 is patentable for at least an additional reason. Specifically, the Examiner admits in text spanning pages 5 and 6 of the Office Action that "*Shan* does not

teach:" followed by a recitation of the entire structure set forth in Applicants' independent claim 15. The recited structure in independent claim 15 includes first and second electrodes and a first separating ring arranged with a structured arrangement similar to the structural arrangement set forth in claim 1. In view of this admission by the Examiner on pages 5 and 6 of the Office Action, Applicants request that the Examiner withdraw the rejection of claim 1 for at least this additional reason.

Because claims 2, 3, 5, and 8-10 depend from independent claim 1, Applicants submit that these claims are also patentable for at least the same reasons discussed above. Furthermore, these claims recite unique combinations of elements not taught, disclosed or suggested by *Shan*.

Rejection of Claims Under 35 U.S.C. § 103

Claims 15-17 over Shan in view of Suntola and Maher

Claims 15-17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over *Shan* in view of U.S. Patent No. 5,711,811 to Suntola et al. (hereinafter *Suntola*) and U.S. Patent No. 5,891,350 to Maher, Jr., et al. (hereinafter *Maher*). Of these claims, claim 15 is independent. Applicants respectfully disagree with the rejection for the reasons set forth in the following remarks.

As remarked above, the Examiner admits in text spanning pages 5 and 6 of the Office Action that "*Shan* does not teach:" followed by a recitation of Applicants' entire independent claim 15. In view of this admission, the Examiner has failed to establish *prima facie* obviousness because the primary reference fails to teach any element or limitation set forth

in Applicants' claim 15. For at least this reason, Applicants respectfully request that this rejection be withdrawn.

Assuming *arguendo* that the Examiner is relying on *Shan* to teach subject matter found in Applicants' claim 15, which by the Examiner's own admission he is not, Applicants submit that there is no suggestion or motivation to modify *Shan* based upon the disclosure in *Suntola*. Specifically, *Suntola* is directed to a system for depositing thin films by vapor phase deposition in an atomic layer epitaxy (ALE) process. A person having ordinary skill in the art would not consult *Suntola*, which teaches a non-plasma deposition system, for the purpose of modifying the plasma deposition system disclosed in *Shan*. These two types of deposition systems operate under dramatically different principles. Specifically, the *Shan* deposition system generates a plasma with plasma products that react at the surface of a substrate to promote deposition of a thin film. In contrast, the *Suntola* deposition system directs a first reactant in a non-plasma state to a substrate and permits a monolayer of the first reactant to adsorb, purges the first reactant from the process chamber, directs a second reactant in a non-plasma state to the substrate to react with the monolayer of the first reactant in a self-limiting reaction that ends when the monolayer of the first reactant is reacted, purges the second reactant from the process chamber, and repeats this sequence of steps to incrementally deposition a thin film in a monolayer-by-monolayer fashion. *See Suntola* at column 1, lines 6-16.

Because of the dramatic differences in operating principles between *Shan* and *Suntola*, a person having ordinary skill in the art would not find any motivation to modify *Shan* in the manner suggested by the Examiner based upon the disclosure in *Suntola*. In other words, a person having ordinary skill in the art would not substitute structure from an ALE deposition system into a plasma deposition system. For at least this reason, Applicants submit that the

Examiner has failed to establish *prima facie* obviousness. Therefore, Applicants request that the rejection of independent claim 15 be withdrawn.

Applicants submit that there is no suggestion or motivation to modify *Shan* and *Suntola* based upon the disclosure in *Maher*. Specifically, *Maher* is directed to a plasma etching system used for removing a layer from a surface of a substrate. *Maher* is not directed to a deposition system for depositing layers on a substrate. A person having ordinary skill in the art would not consult *Maher*, which teaches an etching system for removing a layer from a substrate, for the purpose of modifying a deposition system, as described in either *Shan* or *Suntola*, which deposits a layer on a substrate. Hence, even if *Maher* were to teach "a wafer plasma processing system (Figure 4) including plural parallel electrodes 19a,b-25a,b each interposed between insulating dielectric layers," as alleged by the Examiner, a person having ordinary skill in the art would not find any motivation to modify *Shan* and *Suntola* based upon *Maher*. For at least this additional reason, Applicants submit that the Examiner has failed to establish *prima facie* obviousness. Therefore, Applicants request that the Examiner withdraw the rejection of independent claim 15.

The Examiner states in text spanning pages 8 and 9 of the Office action that "[m]otivation to add Suntola's apparatus (Figure 3) with Maher's plasma generating means to Shan's apparatus includes, among plural motivations, for plasma processing as taught in Suntola (column 1; lines 42-44), and for processing plural substrates for greater through-put compares to Shan as taught by Suntola." This statement of purported "motivation" by the Examiner is flawed for several reasons. Specifically, the Examiner fails to explain why one of ordinary skill in the art at the time the invention was made would have been motivated to make **the proposed**

modification(s) necessary to arrive at the **claimed subject matter**, as mandated under MPEP § 706.02(j).

Applicants fail to understand how adding "Suntola's apparatus ... with Maher's plasma generating means," to *Shan* is somehow motivated by "plasma processing as taught by Suntola" or "processing plural substrates for greater throughput compared to Shan as taught by Suntola", as alleged by the Examiner.

With regard to the former alleged motivation, *Shan* is a plasma deposition system. So, a person having ordinary skill in the art would not somehow be motivated to modify *Shan* to include "Maher's plasma generating means" from *Maher* for a feature already found in the plasma deposition system of *Shan*. Moreover, the element or limitation of "Maher's plasma generating means" is not claimed subject matter. Consequently, the Examiner is setting forth an improper motivation to modify Shan to include a feature, namely "Maher's plasma generating means," that is not claimed subject matter. Furthermore, the element or limitation of "Suntola's apparatus" is not claimed subject matter. Consequently, the Examiner is setting forth an improper motivation to modify *Shan* to include features, namely "Maher's plasma generating means" and "Suntola's apparatus," that are not claimed subject matter.

The Examiner also fails to state the **difference or differences** in the claim over the applied reference(s) and the **proposed modification** of the applied reference(s) necessary to arrive at the **claimed subject matter**, as also mandated under MPEP § 706.02(j). The Examiner fails to identify a difference between the primary reference *Shan* and independent claim 15. Applicants can only assume that because, in the Examiner's words, *Shan* does not teach any element of claim 15, that the entire subject matter of claim 15 represents the difference between Shan and claim 15. The Examiner also fails to identify a proposed modification to *Shan*. The

Examiner then fails to articulate a difference between the combination of *Shan* and *Suntola* and independent claim 15 in the Office Action. The Examiner also fails to identify a proposed modification to the combination of *Shan* and *Suntola*. Instead of meeting these requirements for a rejection under 35 U.S.C. § 103(a), the Examiner merely states what Shan does not teach (i.e., every limitation and element of claim 15), what *Suntola* teaches, and what *Maher* teaches.

For at least these additional reasons, Applicants submit that the Examiner has failed to establish *prima facie* obviousness. Therefore, Applicants request that the Examiner withdraw the rejection of independent claim 15.

Applicants note that the passage in *Suntola* relied upon by the Examiner at column 1, lines 42-44 pertains to molecular beam epitaxy (MBE) and chemical vapor deposition (CVD). *Suntola* fails to disclose that plasma processing would be effective for atomic layer epitaxy (ALE). In fact, *Suntola* teaches at column 1, lines 45-53 that growing thin films by ALE requires different prerequisites than growing thin films by MBE or CVD. Consequently, *Suntola* discloses that the use of a plasma in MBE and CVD is not required in ALE because of these different prerequisites. Furthermore, *Suntola* fails to disclose that a plasma-based process is an option for the subject ALE processing system that the Examiner is attempting to combine with *Shan*. Accordingly, there is no suggestion or motivation to modify *Shan* in the suggested manner based upon the disclosure in *Suntola* and no suggestion to modify *Shan* and *Suntola* in the suggested manner based upon the disclosure in *Maher*. For at least these additional reasons, Applicants submit that the Examiner has failed to establish *prima facie* obviousness. Therefore, Applicants request that the Examiner withdraw the rejection of independent claim 15.

Assuming *arguendo* that a proper motivation were present to combine *Shan, Suntola,* and *Maher*, which it is not, Applicants submit that the combination of *Shan, Suntola,*

and *Maher* fails to disclose all features set forth in Applicants' independent claim 15. As mentioned above, the Examiner admits that *Shan* fails to teach any claimed element or limitation found in independent claim 15. On page 7 of the Office Action, the Examiner repeatedly contends that "*Suntola* teaches: ..... a first chamber (38; Figure 3) and a second chamber (38; Figure 3) ...". Applicants' claim 15 fails to recite either a first chamber or a second chamber. On page 7 of the Office Action, the Examiner contends that "*Suntola* teaches: ..... a first separating ring (26; Figure 3; column 9; lines 31-37) ...". *Suntola* fails to discuss element 26 at all in the text spanning column 9, lines 31-37. In contrast, *Suntola* discloses at column 11, lines 9-11 that the element labeled with reference numeral 26 is "[s]uction groove encircling the planar element for collection of possible gas leaks, whereby the suction groove communicates with the collecting outflow channel." Hence, the feature in *Suntola* labeled with reference numeral 26 is not a separating ring of dielectric material between electrodes, as claimed, but represents instead an unfilled volume in "a planar element".

Maher fails to cure the deficiencies of *Shan* and *Suntola*. *Maher* discloses multiple electrode units 19-25. Each of these electrode units (e.g., electrode unit 25) includes a solid layer of dielectric material (e.g., layer 25c) and a pair of electrodes (e.g., electrodes 25a,b) applied to opposite sides of each solid layer of dielectric material, as best shown in Figure 6 of *Maher*. Hence, each pair of electrodes that is separated by the layer of dielectric material does not define a processing region therebetween. Instead, the space between each pair of electrodes is filled by a layer of dielectric material.

The Examiner contends on page 8 of the Office Action that *Maher* teaches "a wafer plasma processing system (Figure 4) including plural parallel electrodes 19a,b-25a,b each interposed between insulating dielectric layers." This construction of *Maher* is flawed in that

one of the "insulating dielectric layers," quoting the Examiner, is interposed between pairs of the "plural parallel electrodes", again quoting the Examiner. The converse arrangement, as contended by the Examiner, is not even disclosed in *Maher*. As explained above, each of the solid layers of dielectric material (e.g., layer 25c) is disposed between one pair of electrodes (e.g., electrodes 25a,b) such that there is no evacuatable processing region between each pair of electrodes. The solid layers of dielectric material do not separate electrodes in adjacent electrode units, such as between electrode units 24 and 25, and do not provide a vacuum-tight seal therebetween.

Consequently, the combination of *Shan, Suntola* and *Maher* fails to disclose "a first separating ring for forming a vacuum-tight seal between said first electrode and said third electrode and defining a first evacuatable processing region between said first electrode and said third electrode, said first electrode adapted to support one of the plurality of substrates in said first processing region for plasma processing, and said first separating ring comprising a dielectric material for electrically isolating said first electrode from said third electrode" or "a second separating ring for forming a vacuum-tight seal between said second electrode and said third electrode to define a second evacuatable processing region between said second electrode and said third electrode, said third electrode adapted to support one of the plurality of substrates in said second processing region for plasma processing, and said second separating ring comprising a dielectric material for electrically isolating said second electrode from said third electrode." For at least these reasons alone, the Examiner has failed to establish *prima facie* obviousness. Therefore, Applicants request that the Examiner withdraw the rejection of independent claim 15.

Because claims 16 and 17 depend from independent claim 15, Applicants submit that these claims are also patentable for at least the same reasons discussed above. Furthermore, these claims recite unique combinations of elements not disclosed or suggested by the combined disclosures of *Shan, Suntola* and *Maher*.

CONCLUSION

Applicants have made a bona fide effort to respond to each and every requirement set forth in the Office Action. In view of the foregoing amendments and remarks, this application is submitted to be in complete condition for allowance and, accordingly, a timely notice of allowance to this effect is earnestly solicited. In the event that any issues remain outstanding, the Examiner is invited to contact the undersigned to expedite issuance of this application.

Applicants do not believe fees are dues in connection with filing this communication. If, however, any fees are necessary as a result of this communication, the Commissioner is hereby authorized to charge any under-payment or fees associated with this communication or credit any over-payment to Deposit Account No. 23-3000.

Respectfully submitted,
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